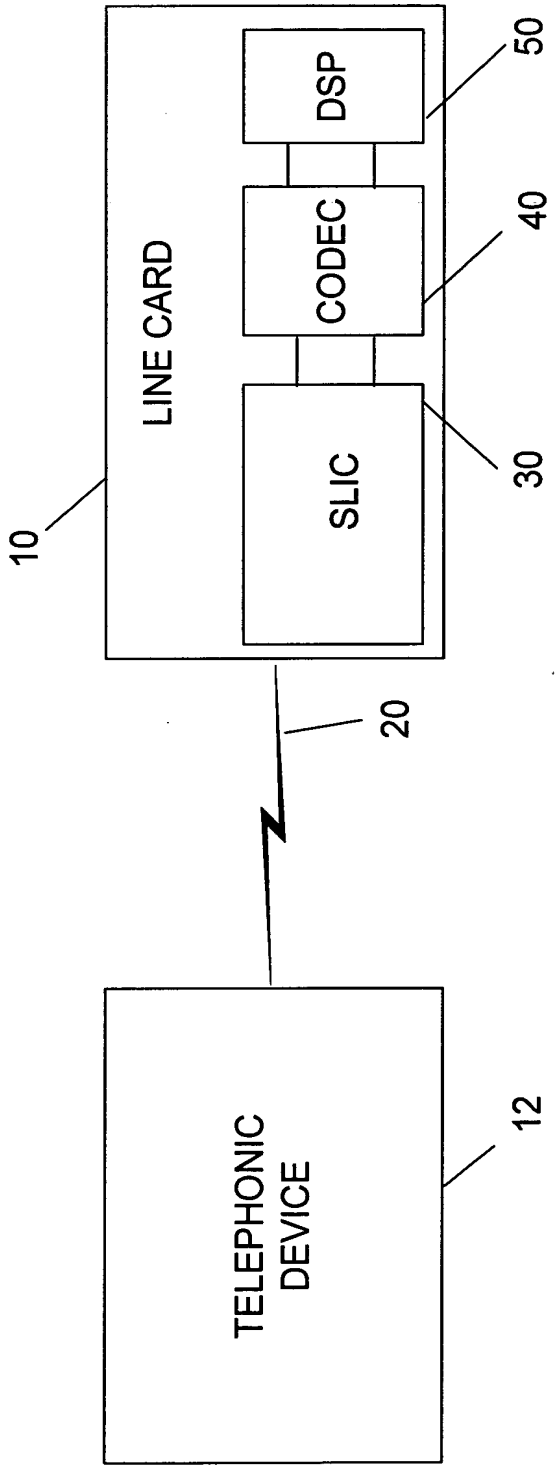
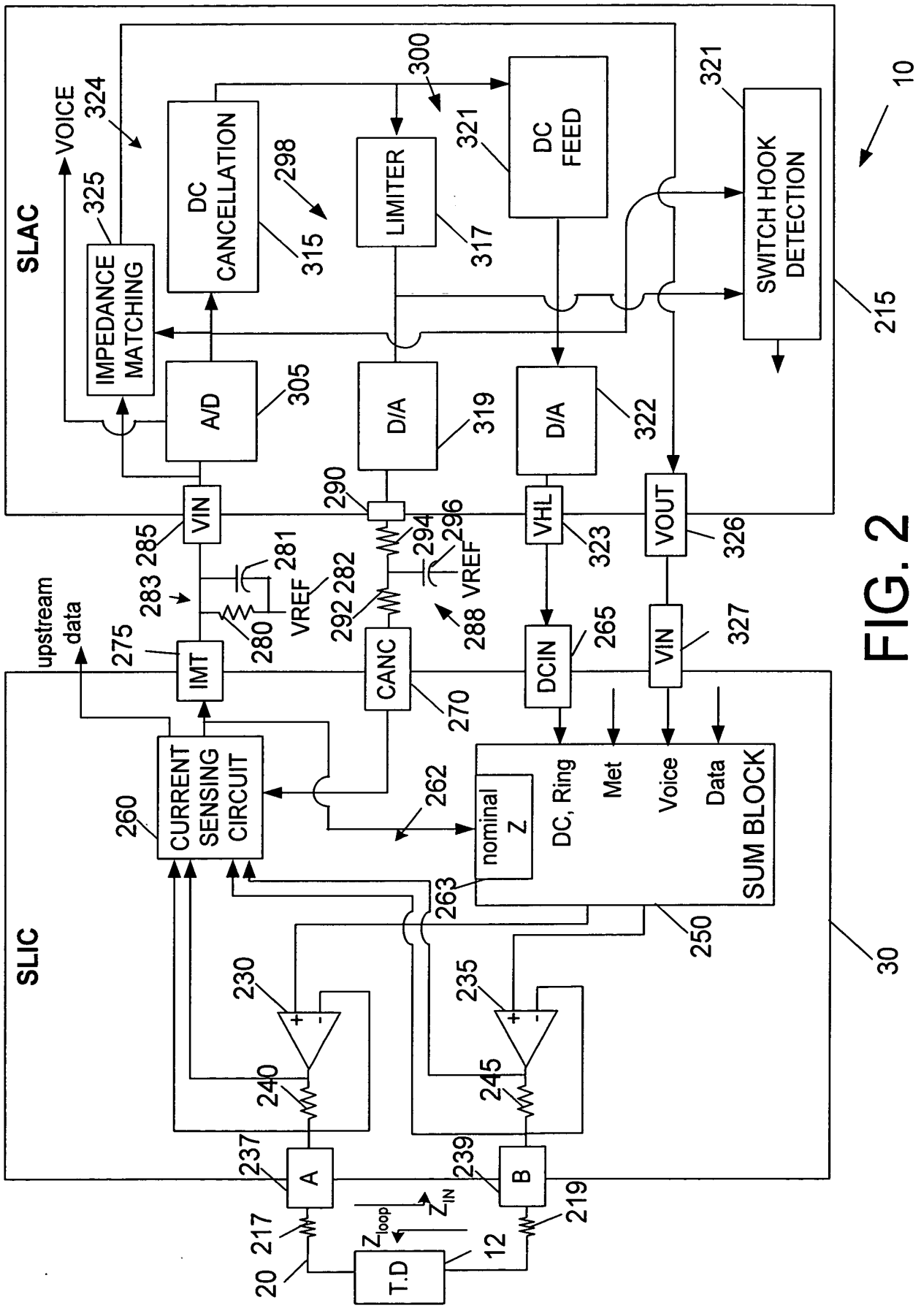


FIG. 1


SLAC
SLIC
VOICE
IMPEDANCE MATCHING
DC CANCELLATION
LIMITER
DC FEED
SWITCH HOOK DETECTION
A/D
D/A
D/A
VIN
VHL
VOUT
IMT
CANC
DCIN
VIN
upstream data
CURRENT SENSING CIRCUIT
nominal Z
DC, Ring
Met
Voice
Data
SUM BLOCK
A
B
T.D
VREF
VREF
10
12
20
30
215
217
219
230
235
237
239
240
245
250
260
262
263
270
275
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326
327

FIG. 2

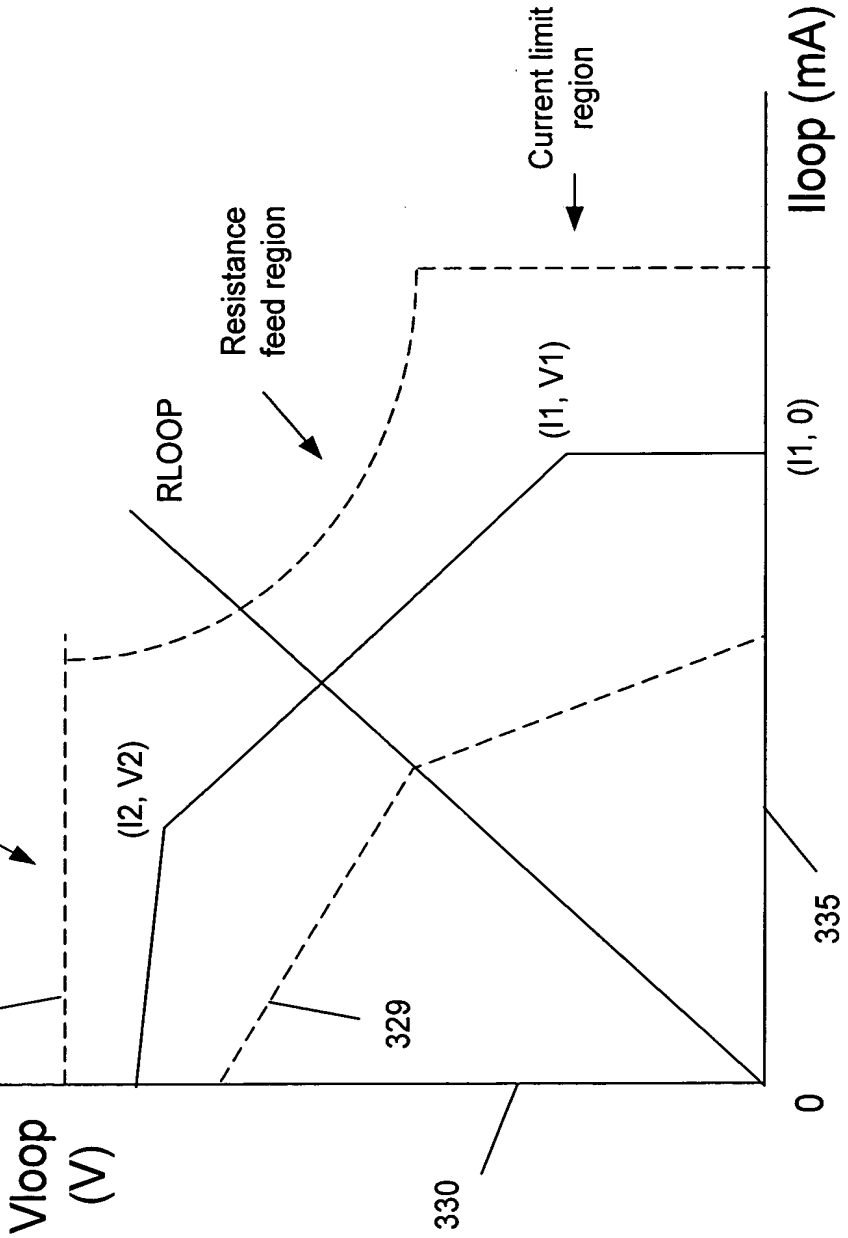
Vloop (V)
Iloop (mA)
Anti-sat region
Resistance feed region
Current limit region
RLOOP
(I2, V2)
(I1, V1)
(I1, 0)
0
328
329
330
335

FIG. 3

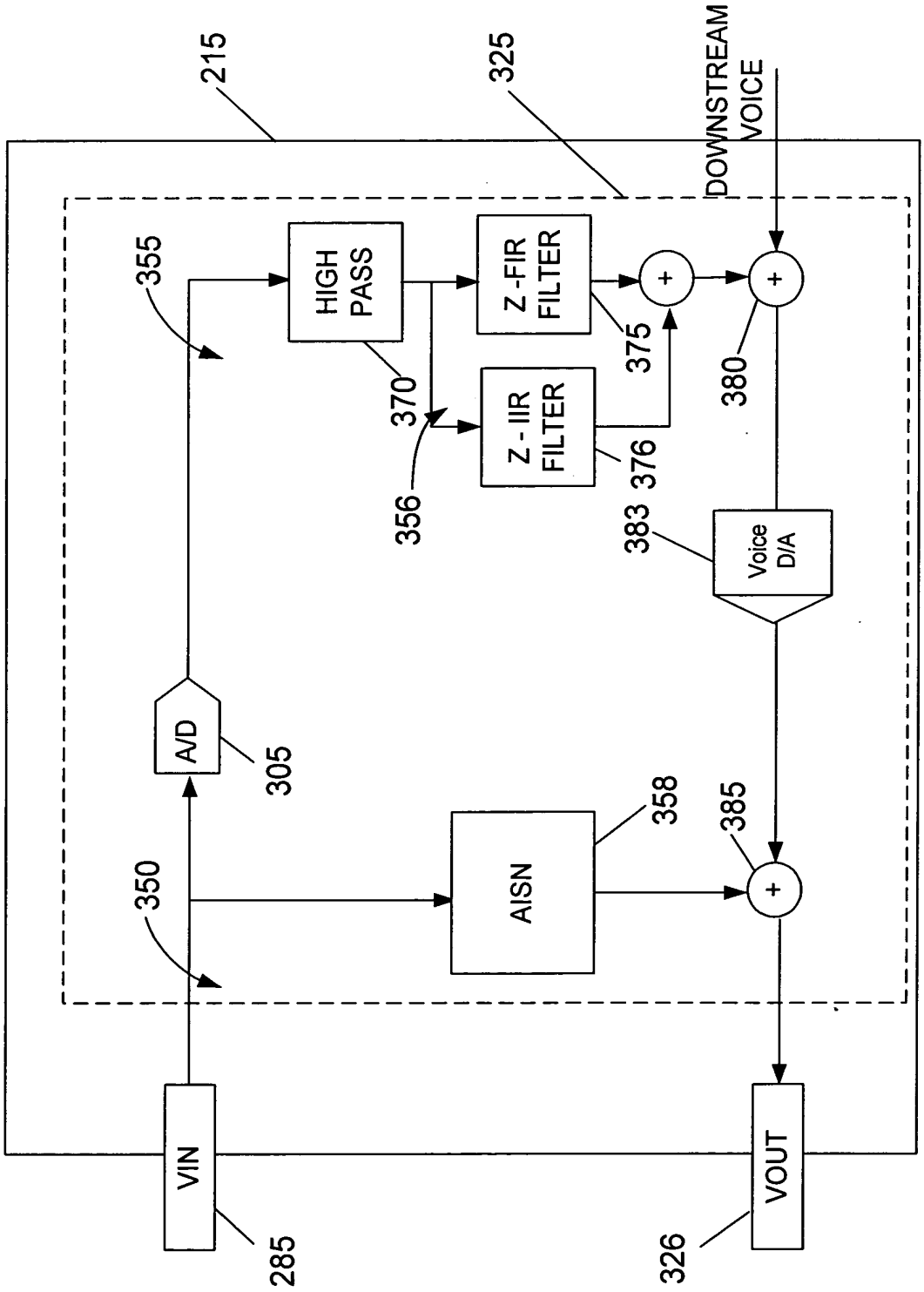
215
325
DOWNSTREAM VOICE
355
HIGH PASS
Z -FIR FILTER
375
380
370
Z - IIR FILTER
376
356
383
Voice D/A
A/D
305
350
AISN
358
385
VIN
285
VOUT
326

FIG. 4

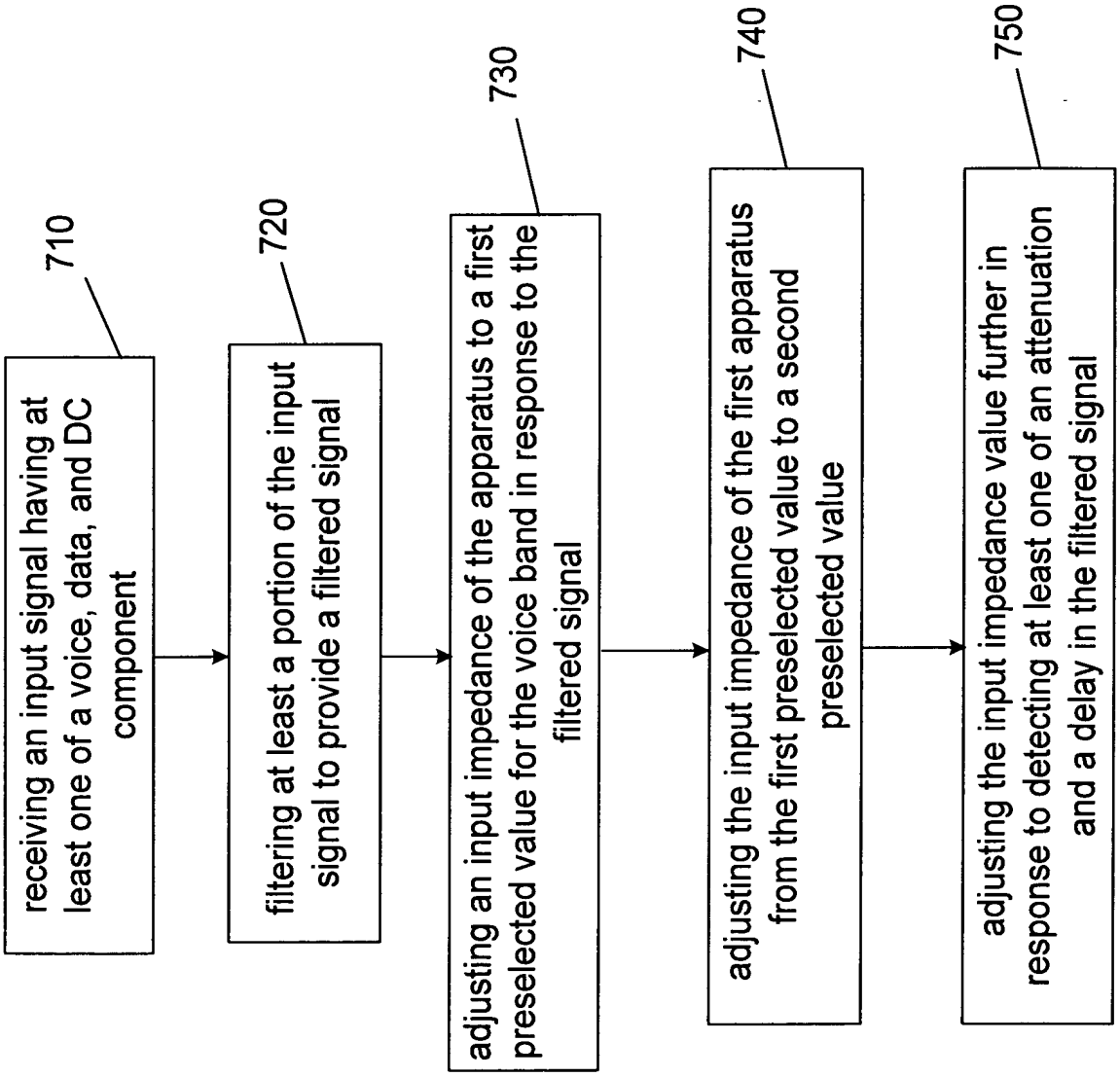
710
receiving an input signal having at least one of a voice, data, and DC component
720
filtering at least a portion of the input signal to provide a filtered signal
730
adjusting an input impedance of the apparatus to a first preselected value for the voice band in response to the filtered signal
740
adjusting the input impedance of the first apparatus from the first preselected value to a second preselected value
750
adjusting the input impedance value further in response to detecting at least one of an attenuation and a delay in the filtered signal

FIGURE 5